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63-3-1

TM-(L)-715/038/00

TECHNICAL MEMORANDUM

(TM Series)

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160-A Utility Program Descriptions

SYSTEM

Milestone XI

DEVELOPMENT

SENPAF

CORPORATION

Prepared by

E. J. Rosenberg

2500 COLORADO AVE.

18 January 1963

SANTA MONICA

Approved by

CALIFORNIA

J. B. Munson

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ASTIA
AS AD NO. 400337

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SUBROUTINE IDENTIFICATION

- A. Title: General Paper Tape Input-Output (SENPAP) 18C AA
- B. Programmer: E. J. Rosenberg, System Development Corporation, 17 January 1963

PURPOSE

SENPAP is a 160-A program which provides an off-line capability of generating magnetic tape from paper tape for input to 1604 programs, and generating paper tape output from magnetic tape produced by 1604 programs.

The function of this program is to relieve the 1604 of time consuming paper tape reading and punching.

USAGE

A. Operating Procedures

1. Set selective jump keys as desired (see USAGE, Paragraph 7).
2. Make tape 2 ready.
3. Ready the paper tape punch or card reader.
4. Call SENPAP from the OSCON master.

B. Parameters

1. Card: (All fields left justified)

Col	Options	Meaning
1	5, 7, or 8	PT level is 5, 7, or 8
1-3	END	Write double EOF on tape drive 2 or punch 50 blank trailer frames and return to OSCON.
2-6	A	All of file is to be processed.

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	XXXX* ₁₀	Count through XXXX ₁₀ 1604 words before processing.
	SYZZ*	Search input through characters YYZZ before processing.
7-11	XXXX* ₁₀	Process XXXX ₁₀ 1604 words.
12	A	Input-output will be assembly mode (i.e. 8 characters per 1604 words)
	C	Input-output will be character mode (i.e. 1 character per 1604 words)
13	H	With the magnetic tape to paper tape option print the visual header on the 1612.
	Blank	No visual header or the paper to magnetic tape option was elected
14-17	SSSS* ₁₀	Skip XXXX ₁₀ files on the magnetic tape before processing.

* XXXX₁₀ Decimal equivalent of number of 1604 words. It cannot exceed 1024, except for paper tape input to be written in assembly mode where 2046 is the maximum.

SSSS₁₀ Any decimal number less than 2047.

YY First of two coded characters to be searched on.

ZZ Second of two coded characters to be searched on.

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L

Loop continuously on other parameters until:

1. Twenty blank frames were found on paper tape input.
2. Double EOF was sensed on magnetic tape input.

Blank

No Loop

2. Typewriter

a. Same as above except:

- (1) Spaces or 0 will be treated as 0.
- (2) A carriage return will nullify all preceeding input and start receiving parameters again.
- (3) No spaces are required between the "ALL" option and next parameter.

3. Messages

- a. "PARAMETERS" - Request for parameters, if typewriter control is elected. Type in parameters in control card format. (See Paragraph USAGE, B.1.)
- b. "ILLEGAL PARAMETERS" - Self explanatory. To input correct parameters, run from this stop. Program will return to input new parameters.
- c. "NOT ENOUGH PARAMETERS" - Self explanatory. Correction procedure same as Paragraph 3.b., above.
- d. "CORE IS FULL - RUN TO WRITE THIS RECORD" - Input has reached maximum storage allowed.
- e. "TAPE LEVEL MUST BE 5, 7, or 8" - Self explanatory. Correction procedure same as Paragraph 3.b., above.
- f. "MAXIMUM COUNT IS 1023 1604 WORDS" - Parameters request more words than can be accommodated. Correction procedure same as Paragraph 3.b., above.

4. Error Returns

See Messages

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5. Tape Assignments

Tape drive logical unit 1. - OSCON MASTER

Tape drive logical unit 2. - I/O Tape

6. Input-Output Formats

a. 12 bit (binary) magnetic tape input-output.

b. 5, 7, or 8 level paper tape.

7. Jump Keys:

Jump key 2 is set for typewriter control and not set for card reader (088) control.

Jump key 4 is set for paper to magnetic tape and not set for magnetic to paper tape.

8. Results:

Either paper tape will be punched in the format prescribed by input parameters or a magnetic tape will be written.

RESTRICTIONS:

A. Minimum hardware

The program can be run with: 8K 160-A,
161 Typewriter
163-2 Magnetic Tape Unit

1. To process paper tape to magnetic tape in records exceeding 511 1604 words, a 169 is required.
2. An 088 card reader is optional.

B. Limits on Volume

Input is restricted to:

Paper tape to magnetic tape assembly mode, 2046_{10} 1604 words
Paper tape to magnetic tape character mode, 1024_{10} 1604 words
Magnetic tape to paper tape assembly mode, 1024_{10} 1604 words
Magnetic tape to paper tape character mode, 1024_{10} 1604 words

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TIMING:

Timing is predicated on the speed of the I/O devices employed. No buffering is employed.

STORAGE REQUIREMENTS:

2342₈ cells of Bank 0 for the program.

72₈ cells of Bank 0 for storage and constants

1155₈ cells of Bank 0 for storage

All of Banks 1 & 2 for input/output

VALIDATION TESTS:

A. A five level paper tape of indefinite length was input with the following parameters on cards: selective jump 4 was set.

1. 5A A 0001
meaning: Five level tape; all; assembly mode; skip 1 file.
2. 5C0050C0001A 0000L
meaning: Five level; count beyond 50 words; process 1 word;
assembly mode; skip 0 files; loop on these parameters.
3. 5C0001S4545A 0000
meaning: Five level; count beyond one word; process until
consecutive codes 45-45 are encountered and processed;
assembly mode; skip 0 files on magnetic tape.
4. 5S0101S4545A 0002
meaning: Five level; search until consecutive codes 01-01
are skipped; process until codes 45-45 are processed; assembly
mode.
5. 5S0101C2040A 0000L
meaning: Five level; search until consecutive codes 01-01
are skipped; process 2040₁₀ 1604 words; assembly mode; skip
0 files; loop on these parameters.
6. Input above specifications changing everything to character
mode.
7. Input above specifications via typewriter.
8. Run above tests with jump key 4 not set. This is for magnetic
tape to paper tape.

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- B. Outputs were those portions of the test tape as described by parameters.
- C. Visual header listing was not tested.

REFERENCES:

- A. SENPAP program deck is under AFCPL catalogue number 80018.
- B. SENPAP test materials are under AFCPL catalogue number 80018.

FLOW DIAGRAM

See Appendix A.

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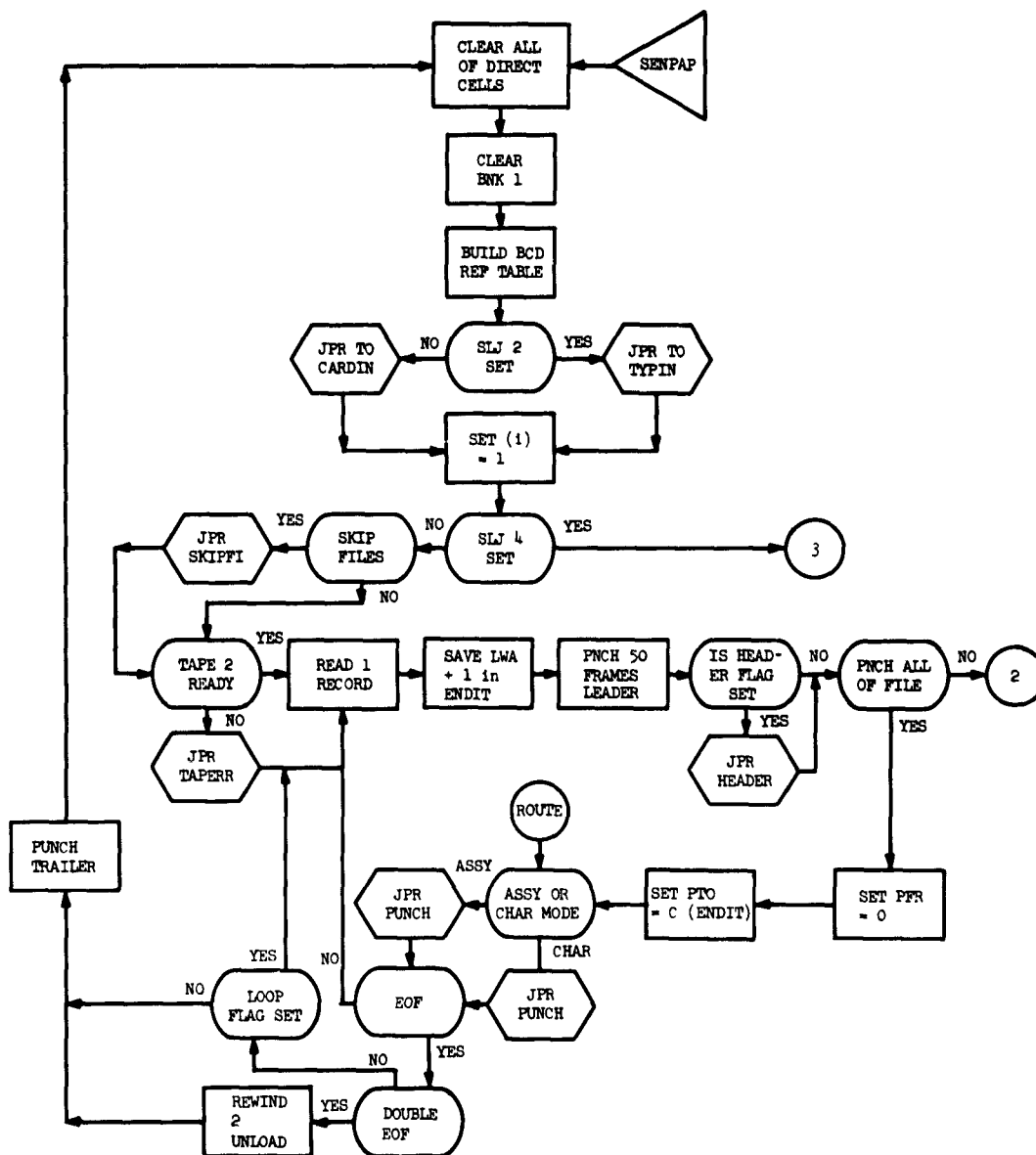
APPENDIX A

SENPAP FLOW DIAGRAMS

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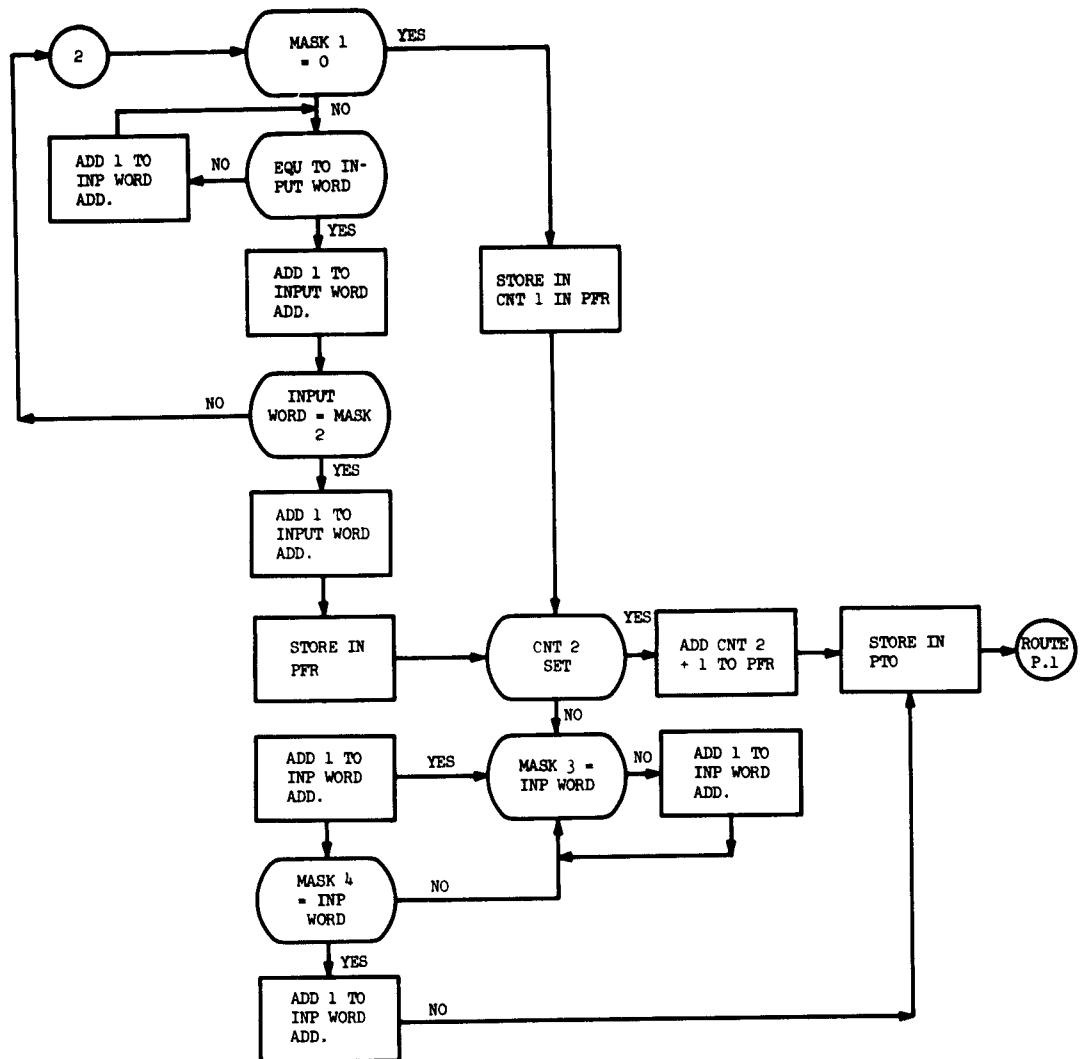
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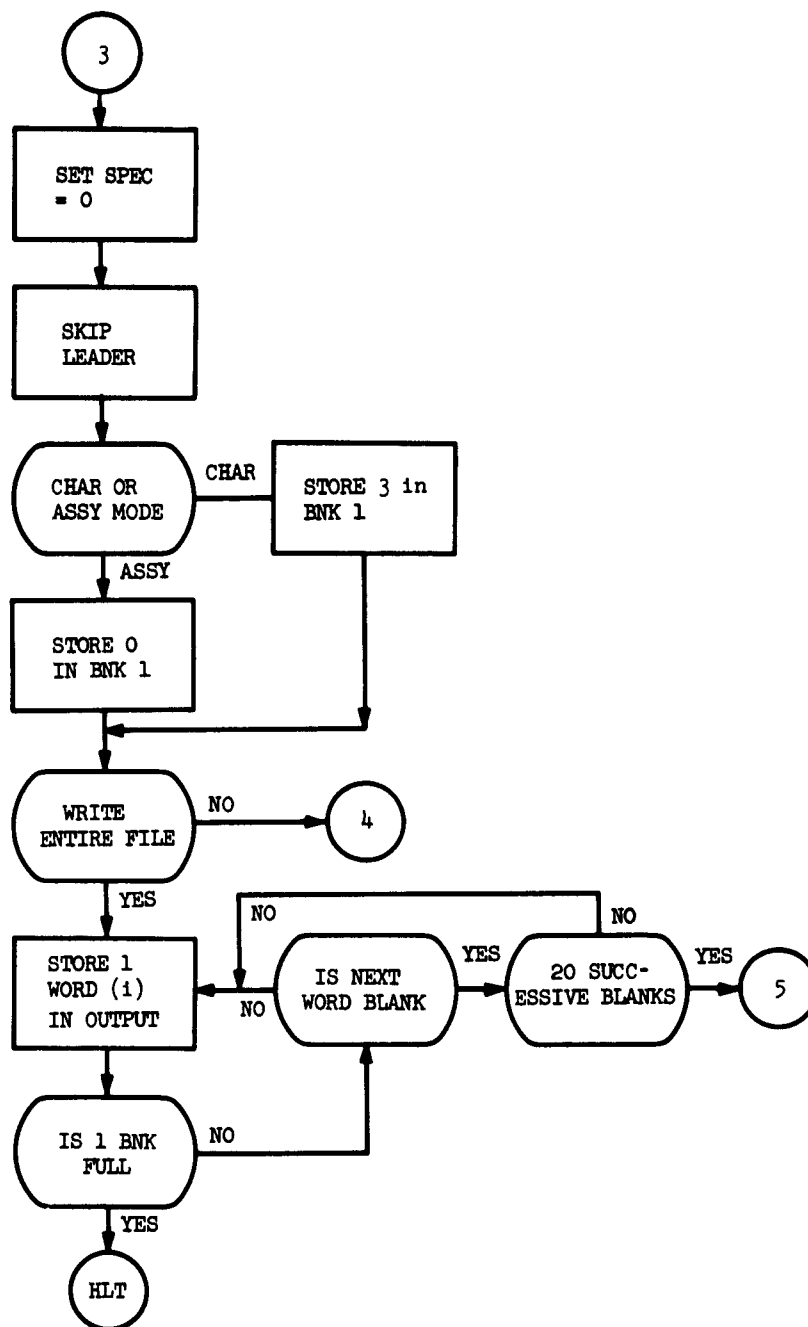


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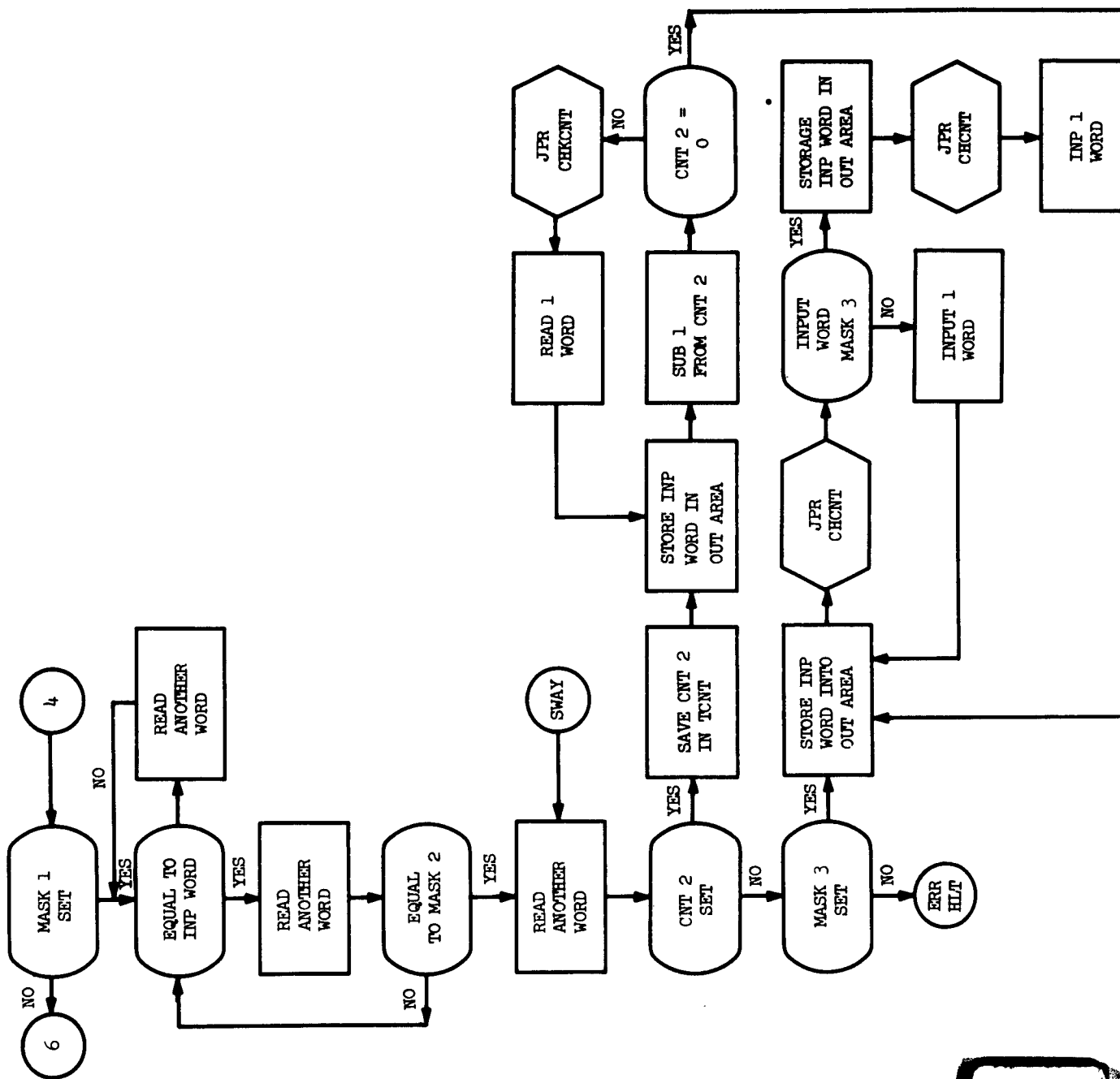


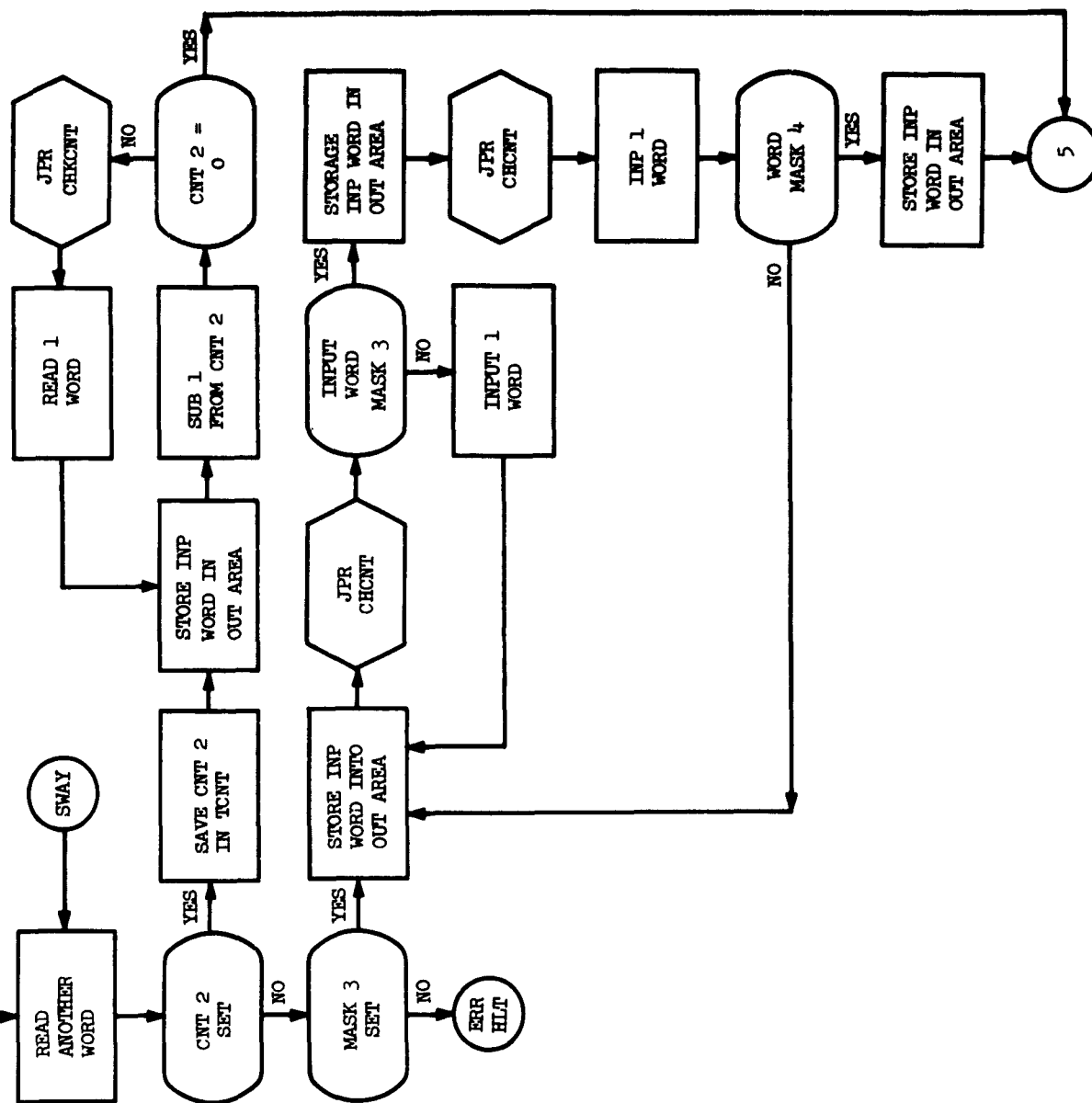


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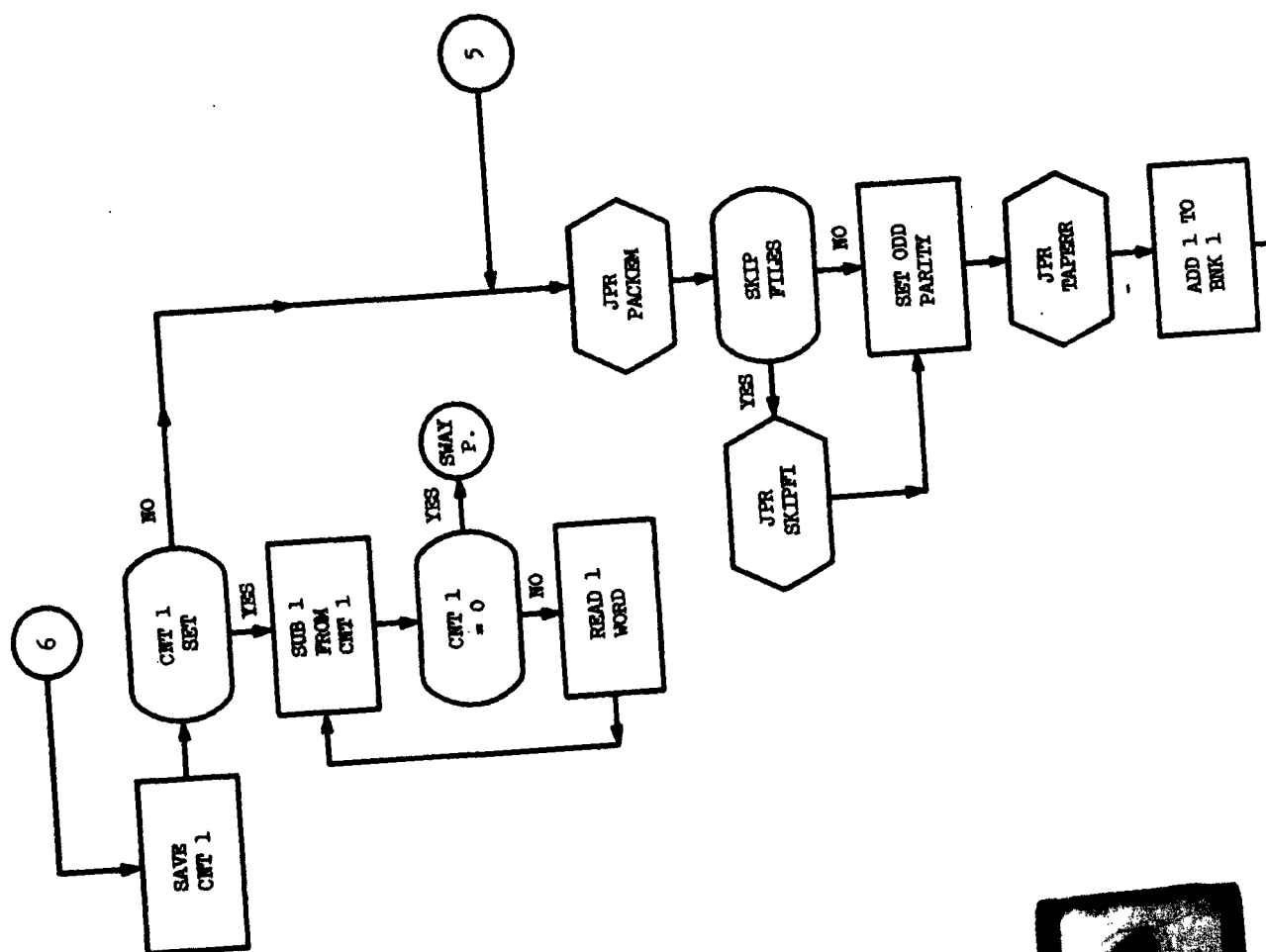


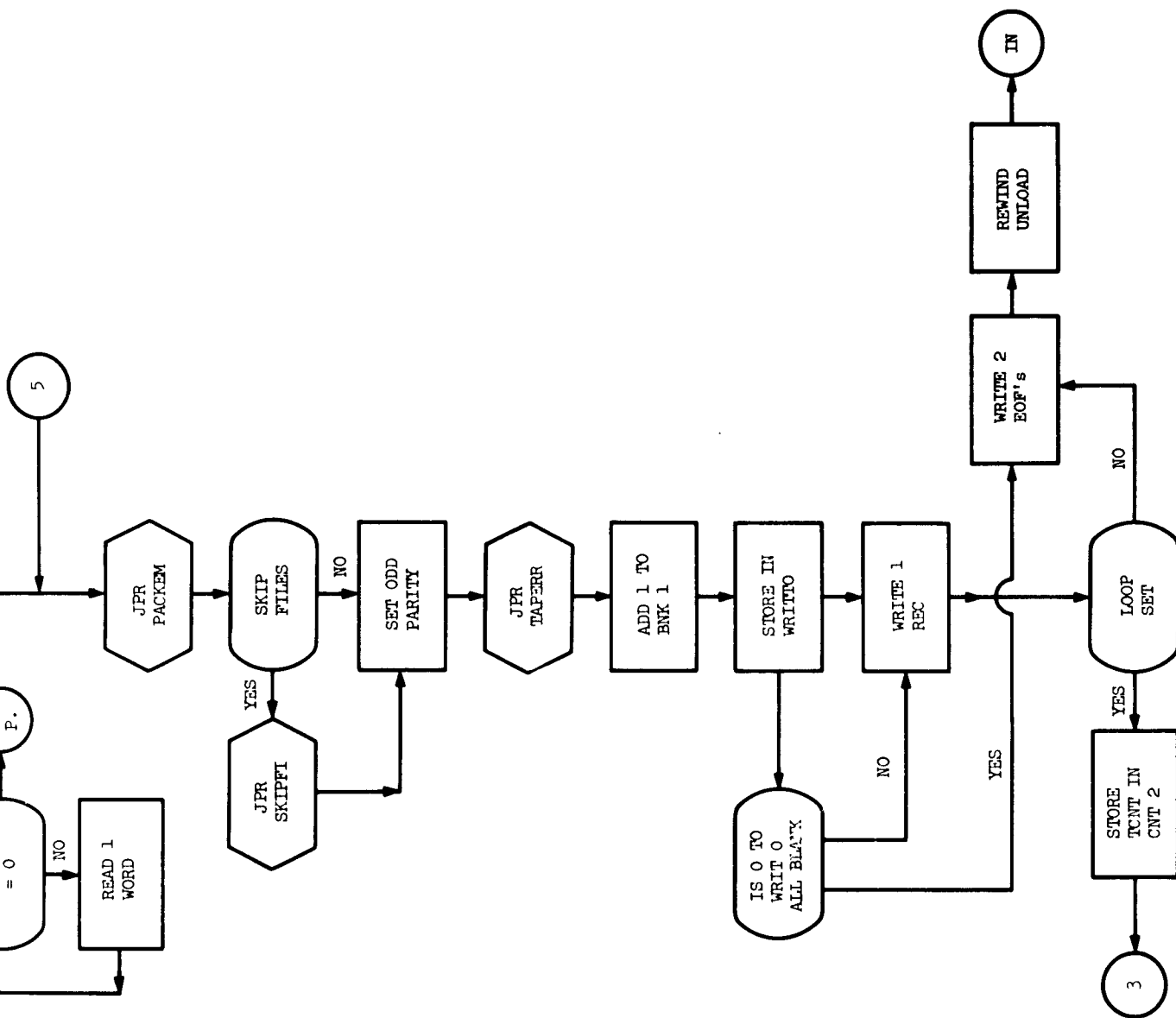


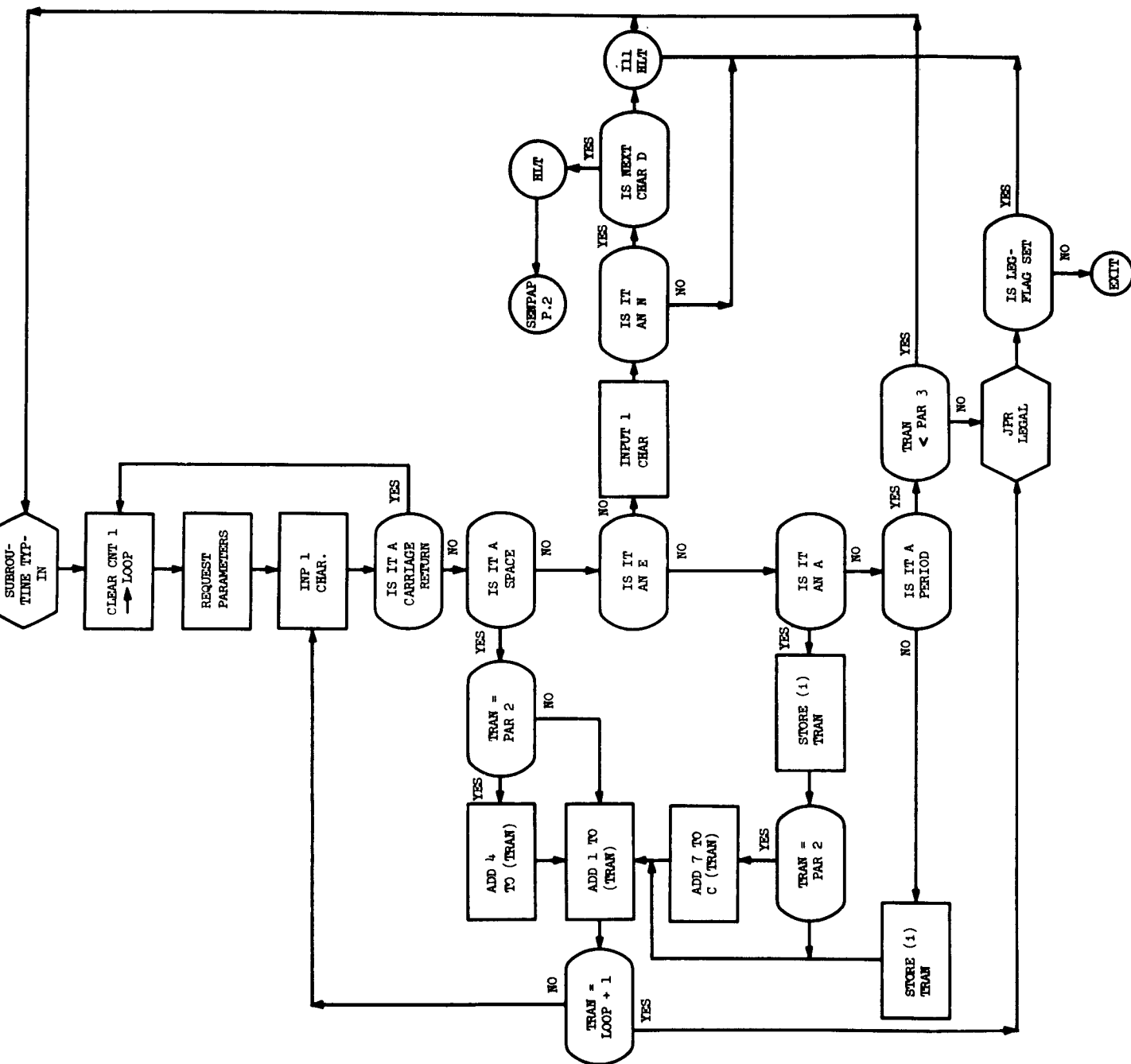
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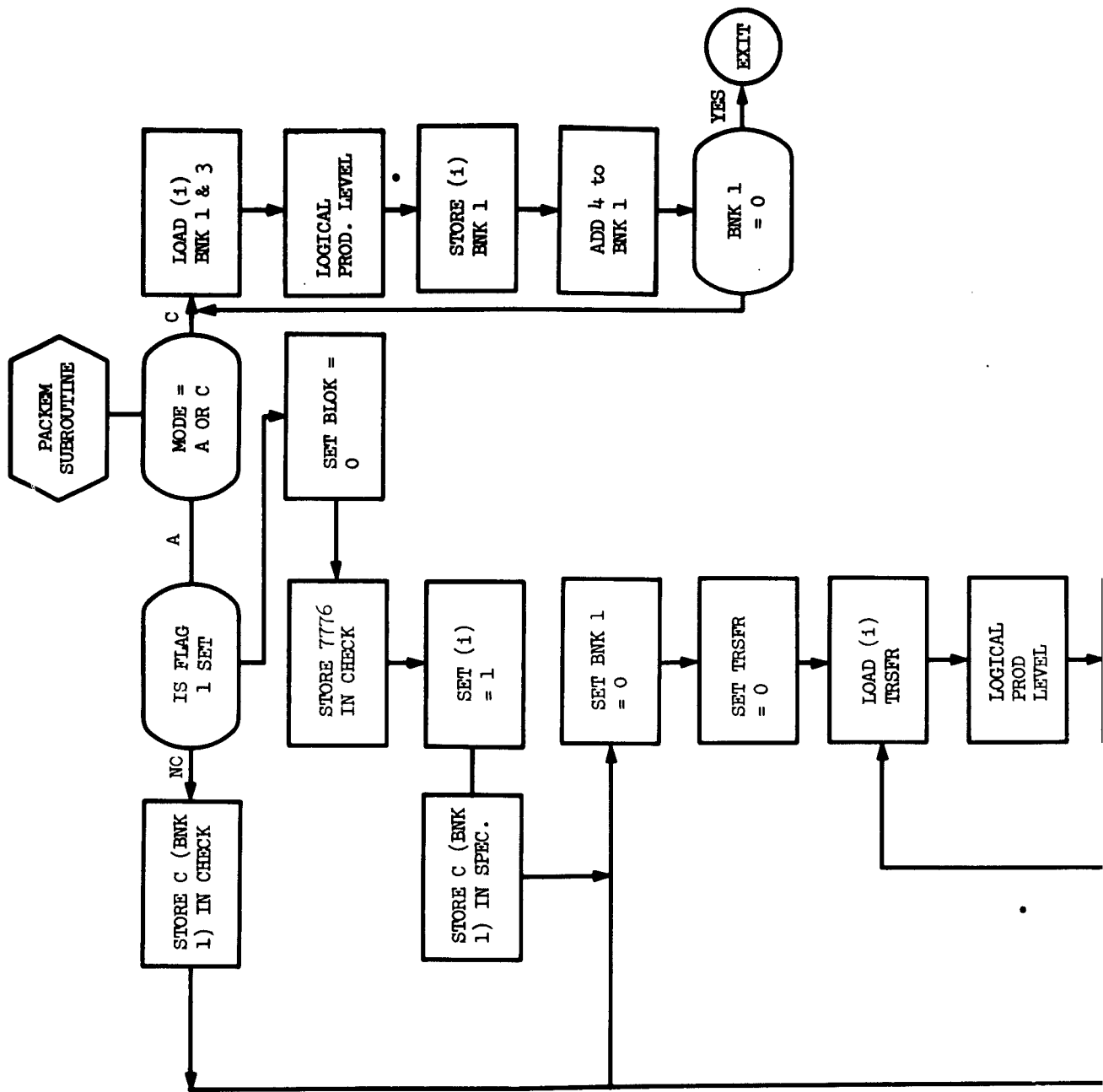


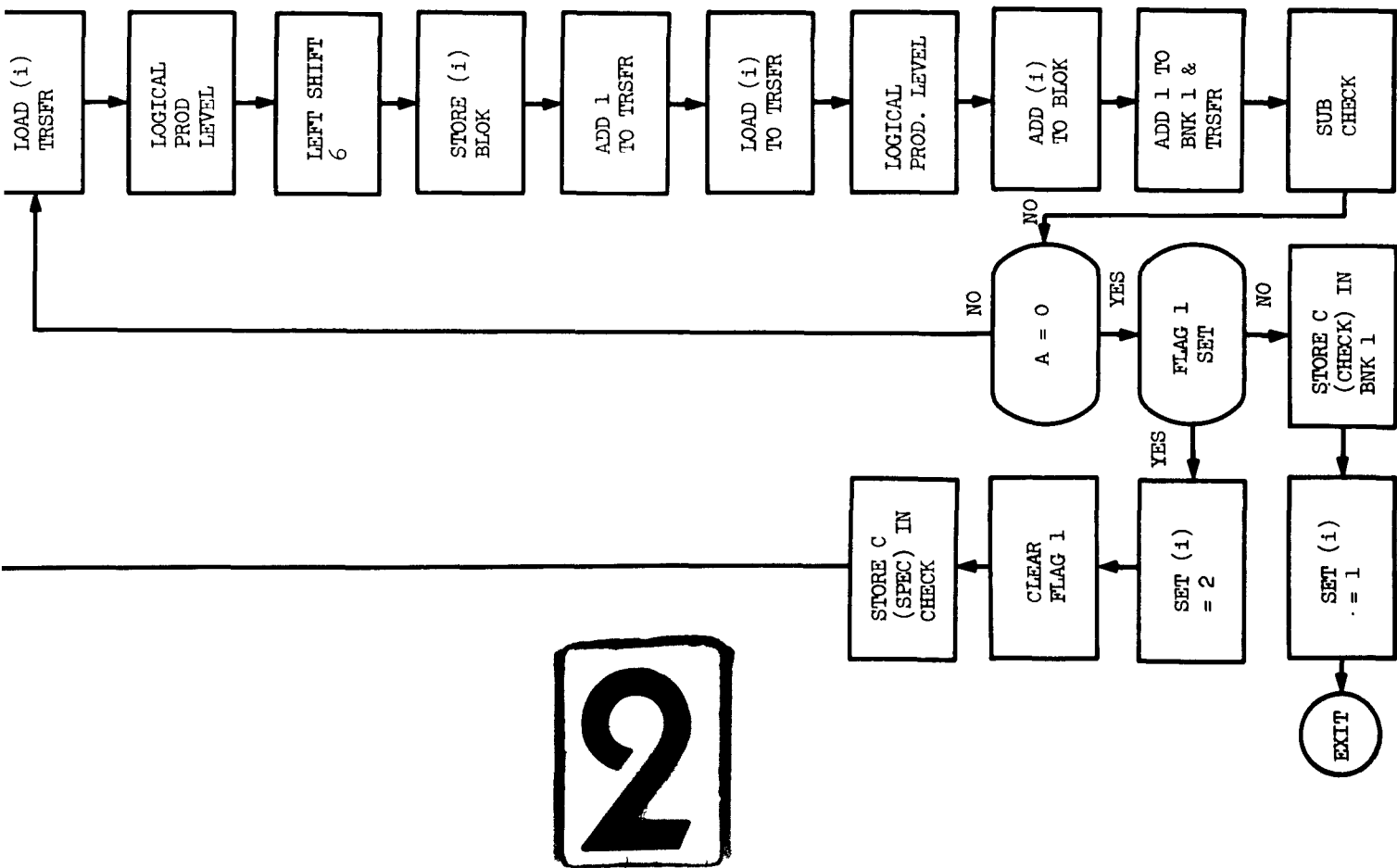


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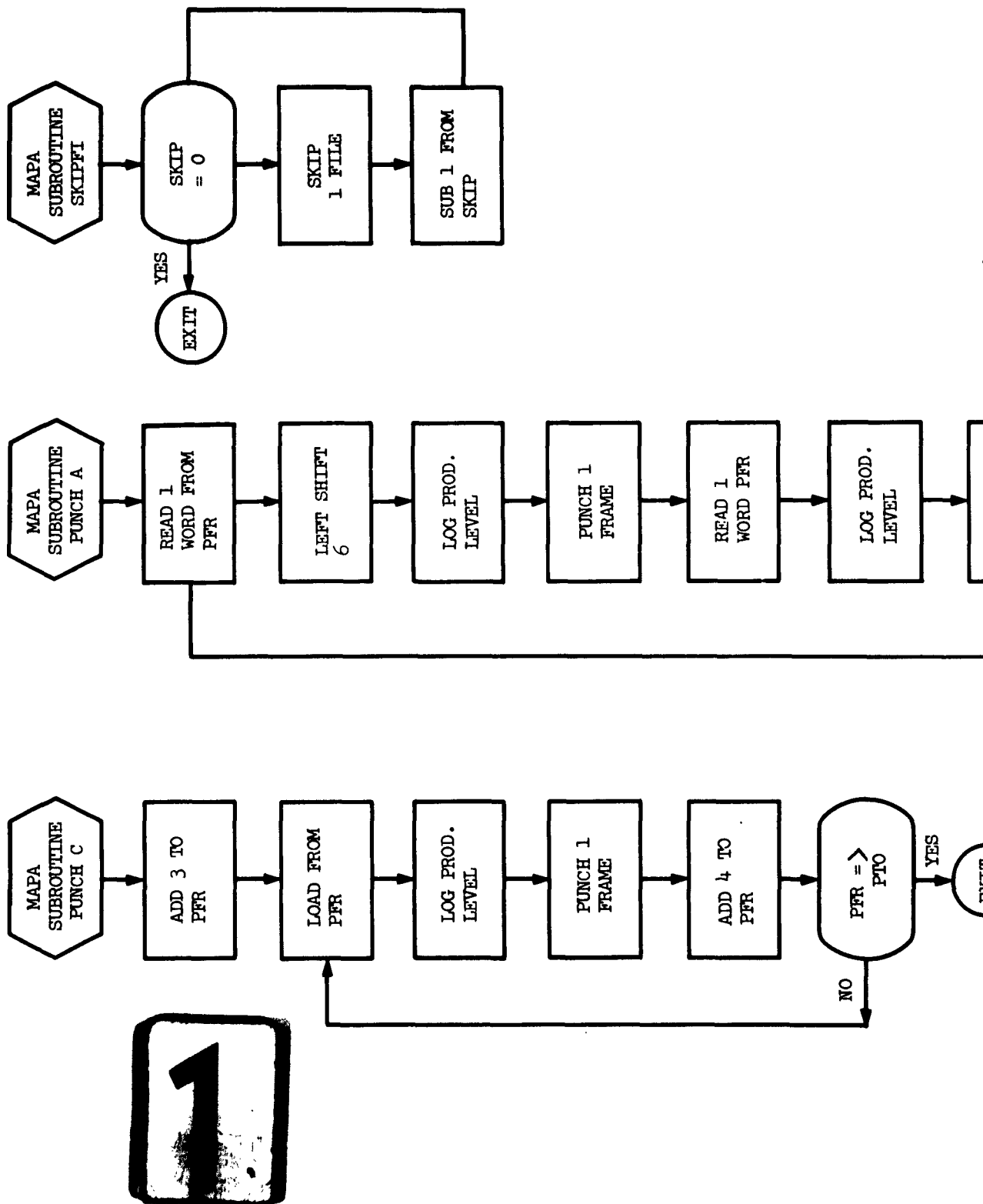


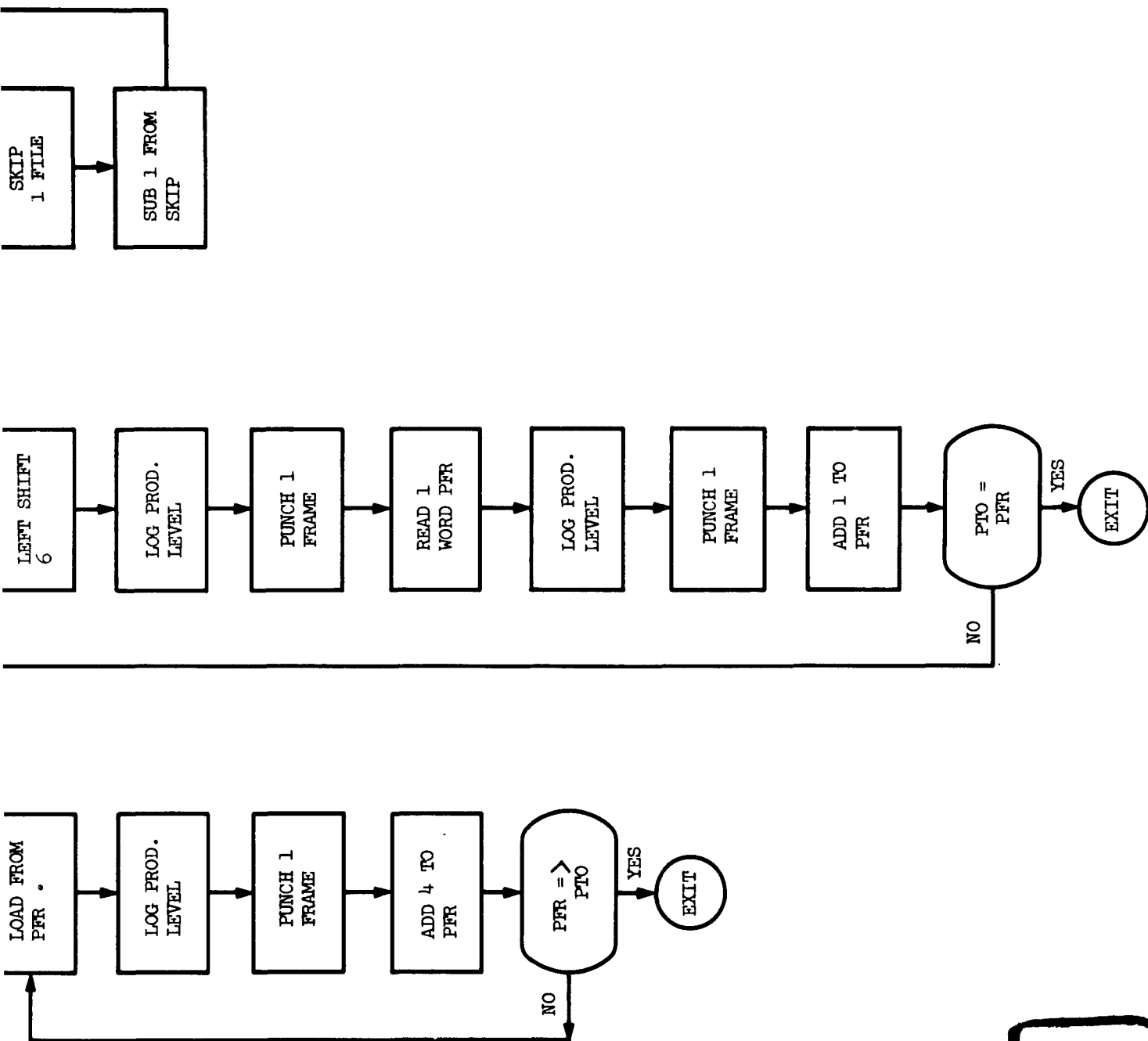


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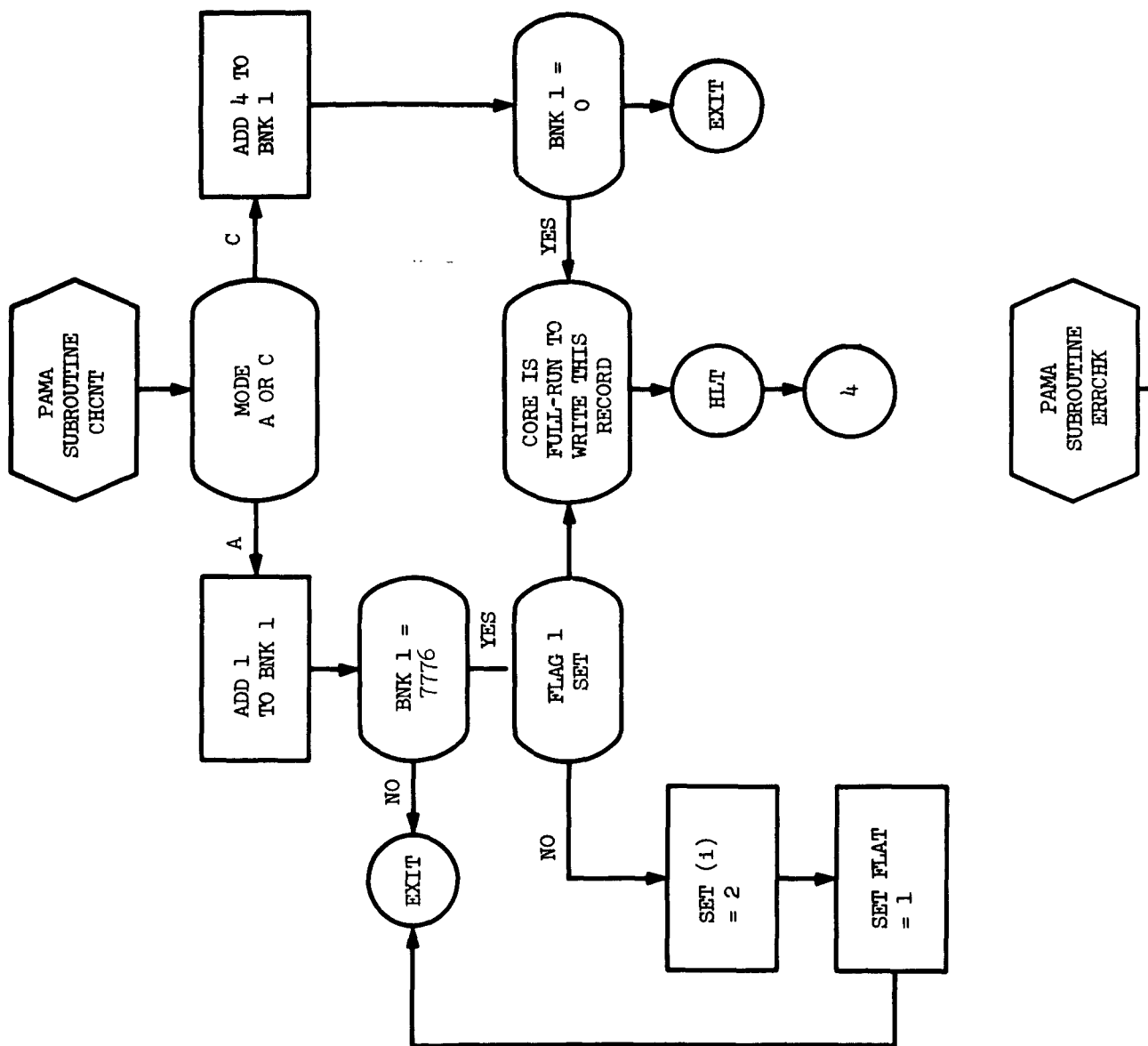


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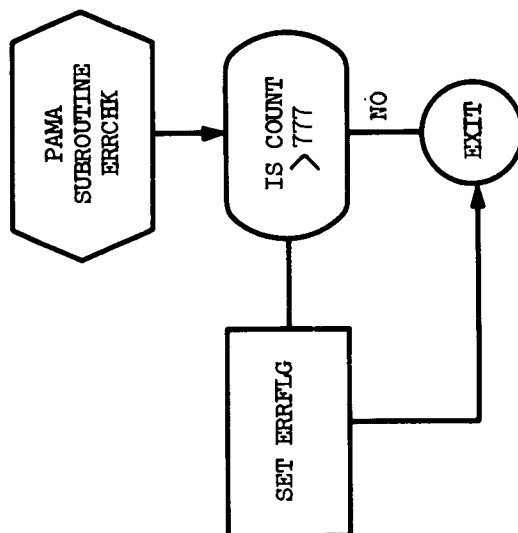
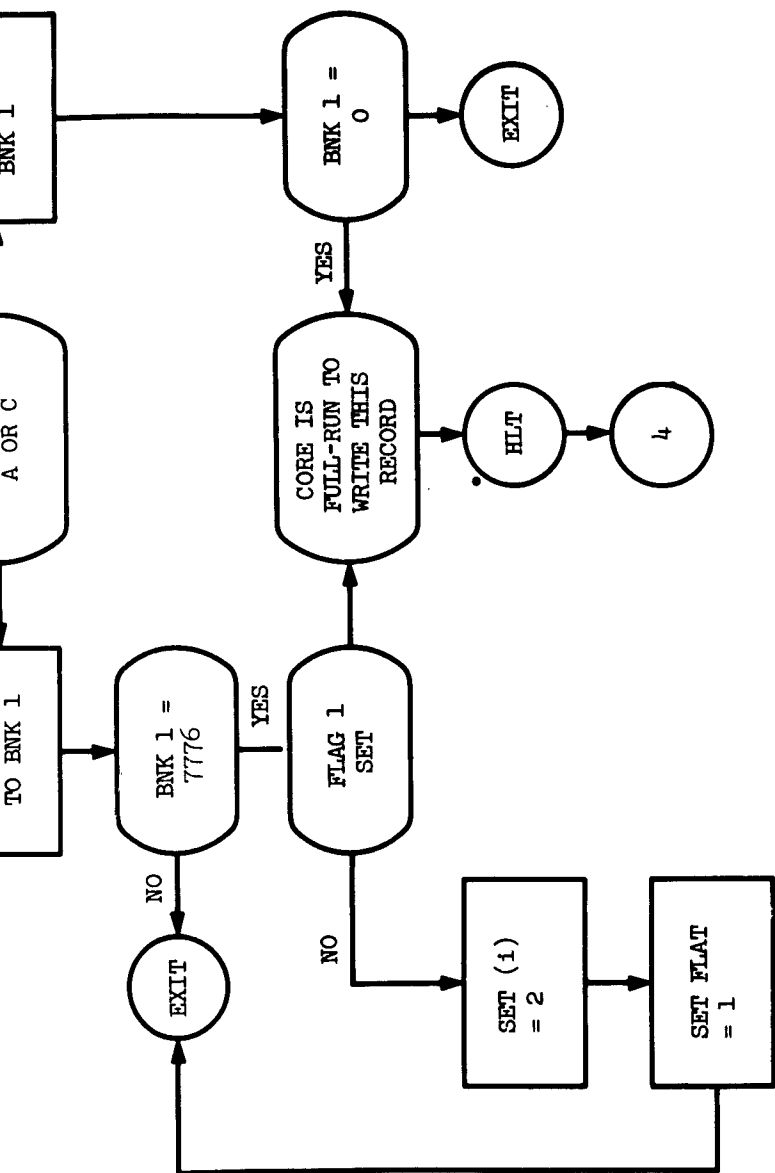
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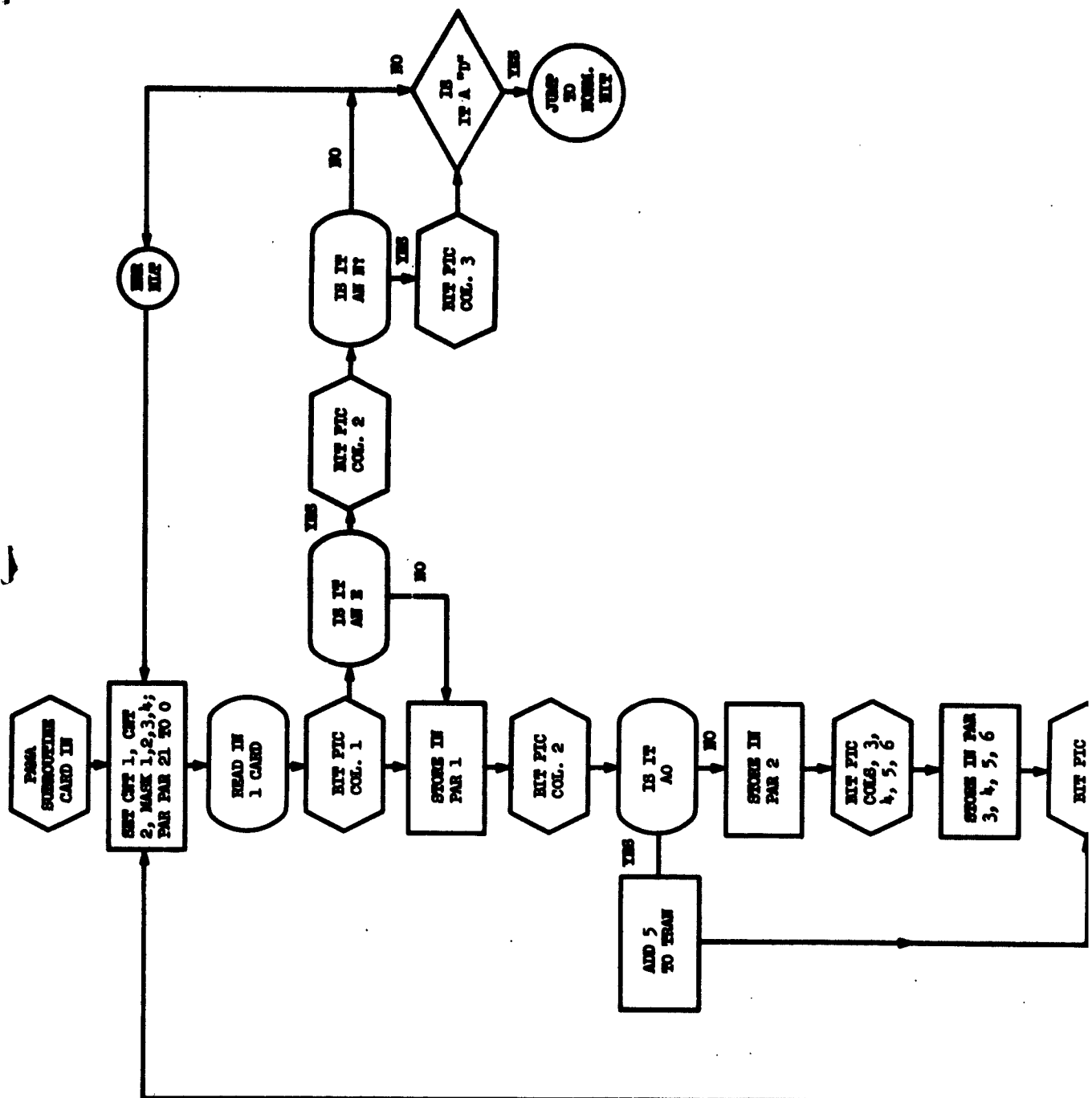
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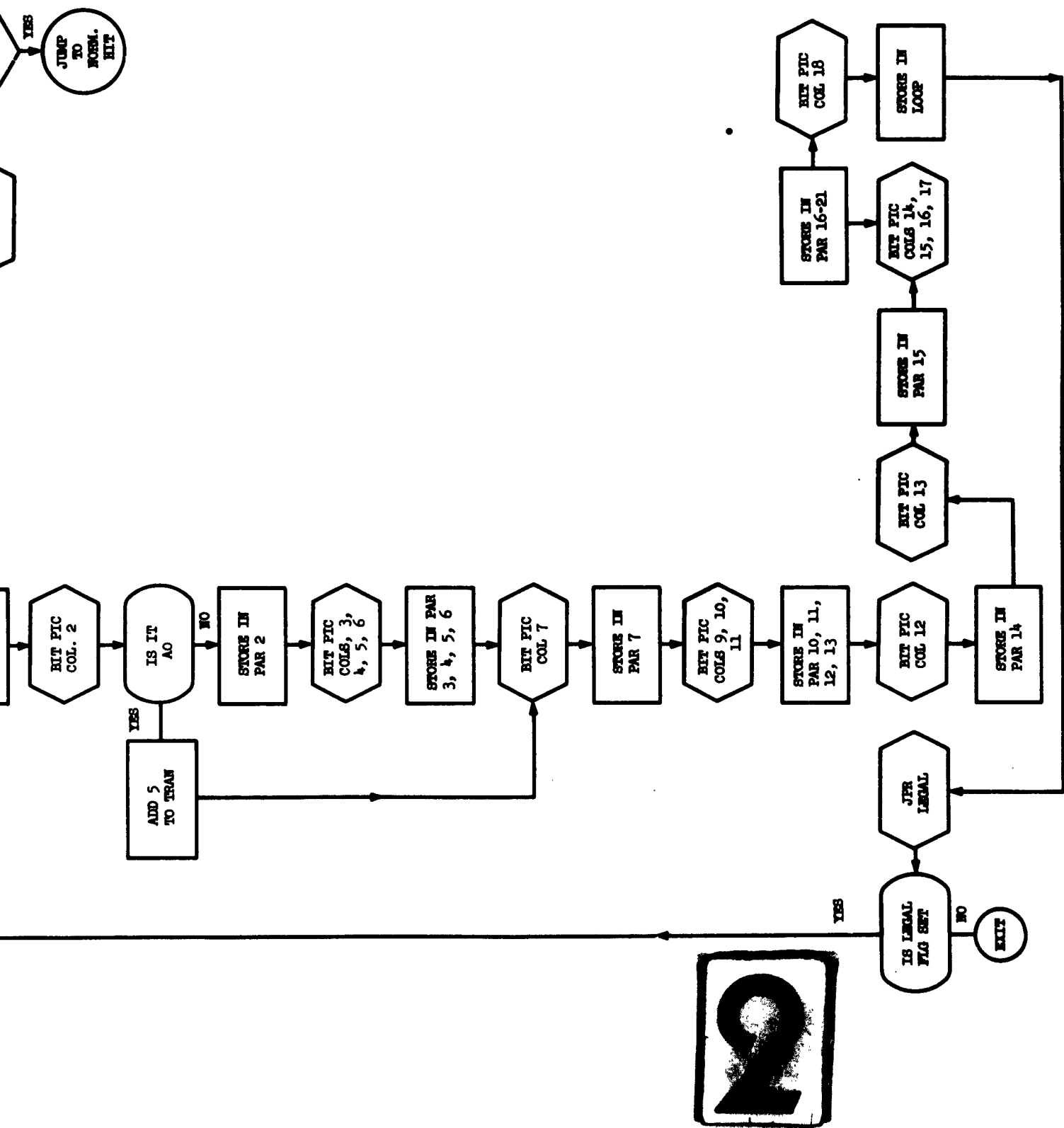


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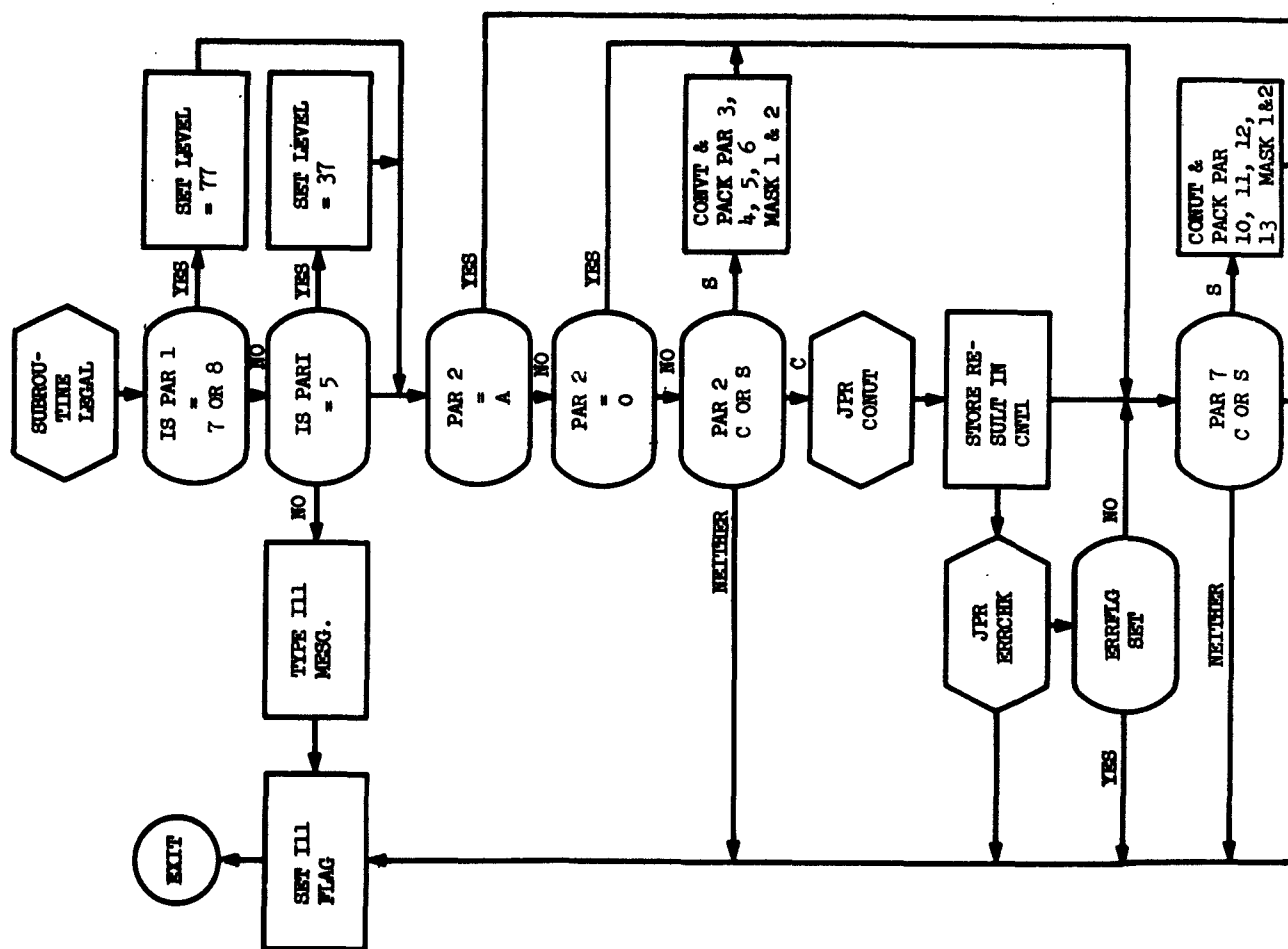


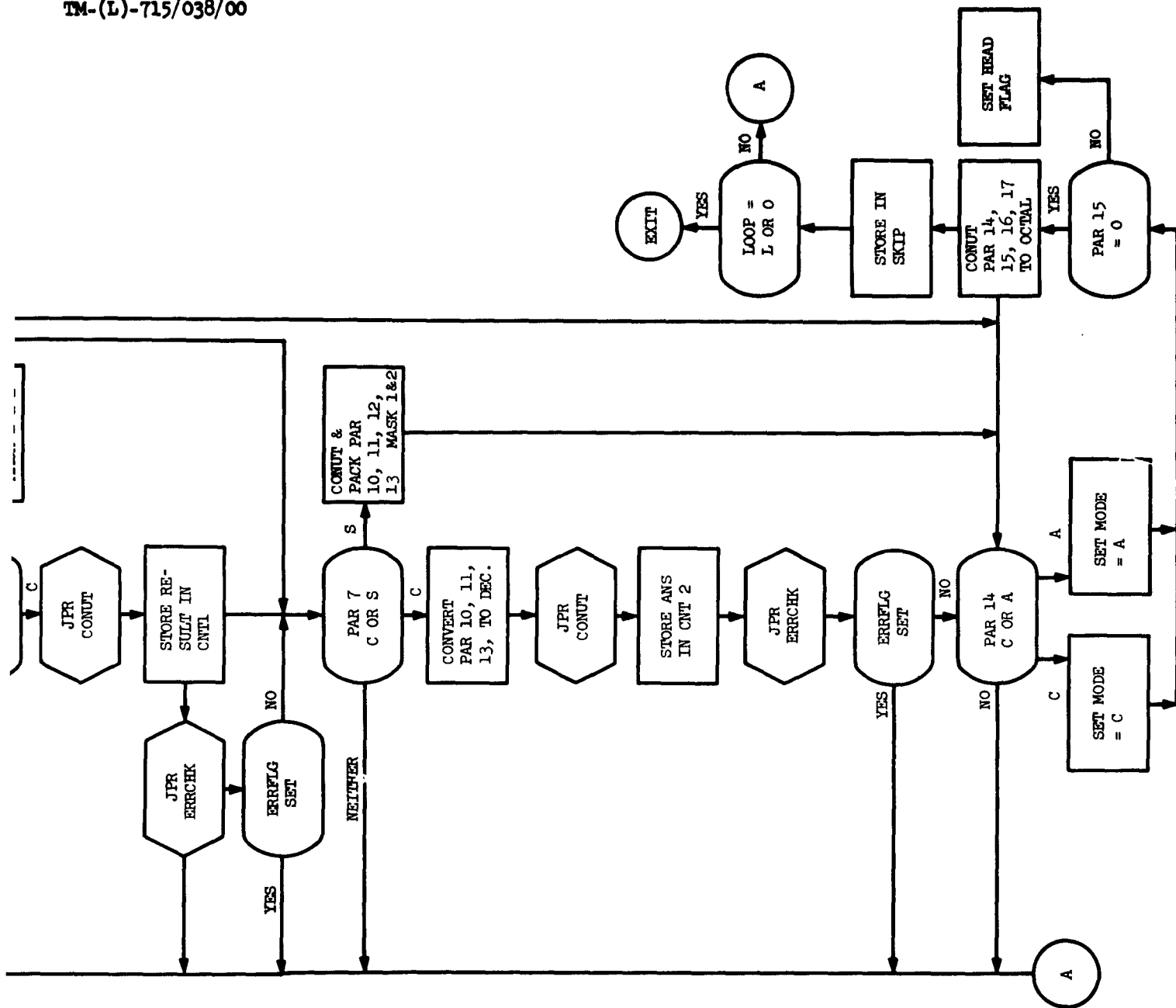


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System Development Corporation,
Santa Monica, California
160-A UTILITY PROGRAM DESCRIPTIONS
MILESTONE XI SENPAP.
Scientific rept., TM(L)-715/038/00,
by E. J. Rosenberg. 18 January 1963, 18p.
(Contract AF 19(628)-1648, Space Systems
Division Program, for Space Systems Division,
AFSC)

Unclassified report

DESCRIPTORS: Programming (Computers).
Satellite Networks.

Describes SENPAP, a 160-A program which
provides an off-line capability of

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generating magnetic tape from paper tape
for input to 1604 programs, and
generating paper tape output from magnetic
tape produced by 1604 programs.
States that the function of this program
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